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PARASITIC LOAD AND HAEMATOBIOCHEMICAL PROFILE OF CATTLE POPULATION OF JOYHING AREA, NORTH LAKHIMPUR, ASSAM

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ABSTRACT

The gastrointestinal (GI) parasitic load and the haematobiochemical profile of local cattle reared in Joyhing area of north bank plain zone of Assam were studied. GI helminth parasites were detected in the faecal samples collected from 90 animals through standard faecal sample examination techniques. The study revealed 55.72% positive for gastro-intestinal parasites which included 38.33% *Strongyle*Spp, 2.22% *Strongyloides* Spp., 5.55% *Trichuris* Spp. However, other gastro intestinal helminths recorded were 4.44% Fasciola and 6.66% Paramphistomum. While comparing between sexes, higher parasitic infestation were recorded in male (62%) than female (38%) animals. However the order of predominance observed in male animals was somewhat inconsistent to that in females. The haematological parameters studied revealed a positive correlation to parasitic load of the infected animals.

KEYWORDS: Parasitic Load, Hematobiochemical Effect, Plain Zone, Assam

INTRODUCTION

Parasitic diseases are responsible for significant losses in animal productivity through morbidity and mortality. The north bank plain zone of Assam is a highly rain affected area during summer season[1] of the year as well as the high humidity is also favorable for the life cycle of parasites[2]. The animal in this region of Assam specifically Lakhimpur district is mainly reared in open grazing system with limited access to modern rearing system including routine deworming and vaccination. Open grazing system favours the transmission of disease from animal to animal as well as parasitic diseases from intermediated host to final host. Among different livestock species reared in this region, cattle comprise the highest population; however, the productivity obtained from the animals is lower in comparison to genetic potentiality. Therefore, the present study was conducted to identify the common gastro-intestinal parasites prevailing in this regionconcomitantwith haematobiochemical parameter'scorrelations.

MATERIALS AND METHODS

Fecal and blood samples were collected from five different pockets of Joyhing area of Lakhimpur district of Assam. The fecal samples were collected per rectally and stored in 10% formalin solution and blood samples were collected from jugular vein using anticoagulant as well as one part for serum separation without anticoagulant. The faecal samples were then examined qualitatively by salt floatation technique [3] to determine the prevalence of the gastrointestinal parasitic infection. Haematological parameters which included Haemoglobin (Hb), Total Leukocyte count (TLC), differential leukocyte count (DLC), were analysed for the animals which were found to be positive for parasitic infestation following standard analytical methods[4]. Serum biochemical parameters were estimated following the standard protocols of commercial kits (ID Lab Biotechnology Inc, Canada) available for individual parameters using UV-vis-Spectrophotometer. The relative blood sugar levels were measured using glucometer supplied by One Touch Inc.

RESULTS AND DISCUSSION

The prevalence of GI parasites and results of haematological and serum biochemical parameters have been presented in Table 1 and Table 2, respectively**.**

Table 1: Percent Parasitic Infestation Result From Coprological Examination of Faecal Sample from Cattle Population

No.of Samples Examined	Overall Prevalence (%)	% Positive For GIN ematode Infection			% For Other GI Trematode	
		Strongyle	Strongyloides	Trichuris	Fasciola	Paramphistomum
90	57.77	38.88	2.22	5.55	4.44	6.66

Table2: Haematological Along With Serum Billirubin and Cholesterol Level in Examined Cattle Population of Joyhing Area of North Lakhimpur

Tlc / Cmm	Dlc%					Rbs $Mgdl^{-1}$	Tsbmgdl^{-1}	Tsc $Mgdl^{-1}$	Tspgdl^{-1}	Hb %
	Phagocyte	Lymphocyte	Monocyte	Eosinophil	Basophil					
9812.69 ± 147.24	40.14 ± 0.79	57.46 ± 0.90	1.04 ± 0.14	1.35 ± 0.19	0	52.12 ± 1.12	0.17 ± 0.01	90.69 ± 1.50	4.31 ± 1.23	8.04 ± 0.26

TSB; total serum bilirubin, TSC; total serum cholesterol, TSP; total serum protein

The present study was directed to comprehend the incidence of GI helminthes infestation in cattle of Joyhing area which was examined through coprologicalexamination during early part (January-March) of 2015. Three generasof intestinal nematodes and two generas of intestinal trematodes were identified. Relative incidence of various species is shown in Table I. The results indicated a wide range of infestation among the recorded GI helminthes species.The incidence of *Strongyel* was 38.88% followed by *Trichuris* 5.55%. *Strongyloides* was resulted 2.22% out of 52 positive animals. On the other hand, highest gastrointestinal trematode was positive for*Paramphistomum* which was recorded 6.66% out of 52 positive cases followed by *Fasciola* (4.44%). Out of all the positive cases, it was observed that only 12 samples were found positive for male animals.Deka*et al*[5] also reported highest *strongyle* infestation in Aizawl area of

north eastern parts. The results of present finding are inconsonance with Singh *et al* [2] where *Strongyles* and *Trichuris* were reported to be highest in caprine in different parts of Assam. The reason might be when cattle graze on natural pasture; climate plays an important role in the transmission of worms[6]. From this study the effect of climate on the prevalence of GI nematodes was evident. During the dry months (December to March), rainfall (scanty showers) and temperature were probably somewhat favourable for the development and survival of the pre-parasitic stages of *strongyles* [7], leading to increased availability of infective larvae on the grazing land. This may be result in an increase in egg counts of *Strongyles*. Many varieties of snail are predominantly found in Joyhing areairrespective of weather conditions. *Paramphitomum*infection occurs through ingestion of contaminated vegetables and grazing lands and where viable infective metacercaria are deposited from snails, which act as intermediate hosts [8].

Hematological studies (Table 2) of blood collected fromcoprologically positive animals revealed significantly decreased values of Hb, and TEC. Amongst GI helminths,*strongyle* is the predominant species. Main pathological condition caused by *strongyle*infection is anemia. Both adult and fourth stage larvae suck blood and in addition, migration of adult and larvae cause hemorrhages into the abomasum. The average blood loss due to *Haemonchus.contortus*infection is 0.03 ml/ parasite/day[9].The hematological studies in present investigation were in unison with the observation of Dhanlakshmi*et al* [10],Zaki*et al.*[11] and Purohit*et al.* [12]. Absolute leukocytic count revealed significant leukocytosis due to neutrophilia, lymphocytosis, monocytosis and eosinophilia were in agreement with the observation of Misra*et al.* [13]. The decrease in value of Hb and TEC might be due to the presence of *strongyle* infection, which had been recognized as active blood sucker in stomach and intestine and also been observed in present studies. Serum biochemical profiles of animals in the present study revealed significant decrease in values of relative blood sugar, total protein, serumbillirubin and serum cholesterol compared with available data from literature. These results are in consonance with finding of Maiti*et al.* [14], Pandit*et al.* [15]. Inappetance with the concomitant reduction in dietary protein, malabsorption and plasma losses from damaged intestinal mucosa might be the main cause for the marked hypoproteinemia observed. The inflammation of the intestine caused by developmental stages of parasites might also due to poor absorption of protein metabolites resulting in low level of total protein and massive ascites since ascetic fluid contains a large amount of protein [9, 10]. Radostits*et al* [16] concluded that low serum glucose level in the animals might be due to decreased appetite of animals, decreased absorption into the blood stream and rapid absorption and utilization of soluble carbohydrate and lipids from the gut by parasites.

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